OIPE IAP19
JUN 26 2006
PATENT & TRADEMARK OFFICE

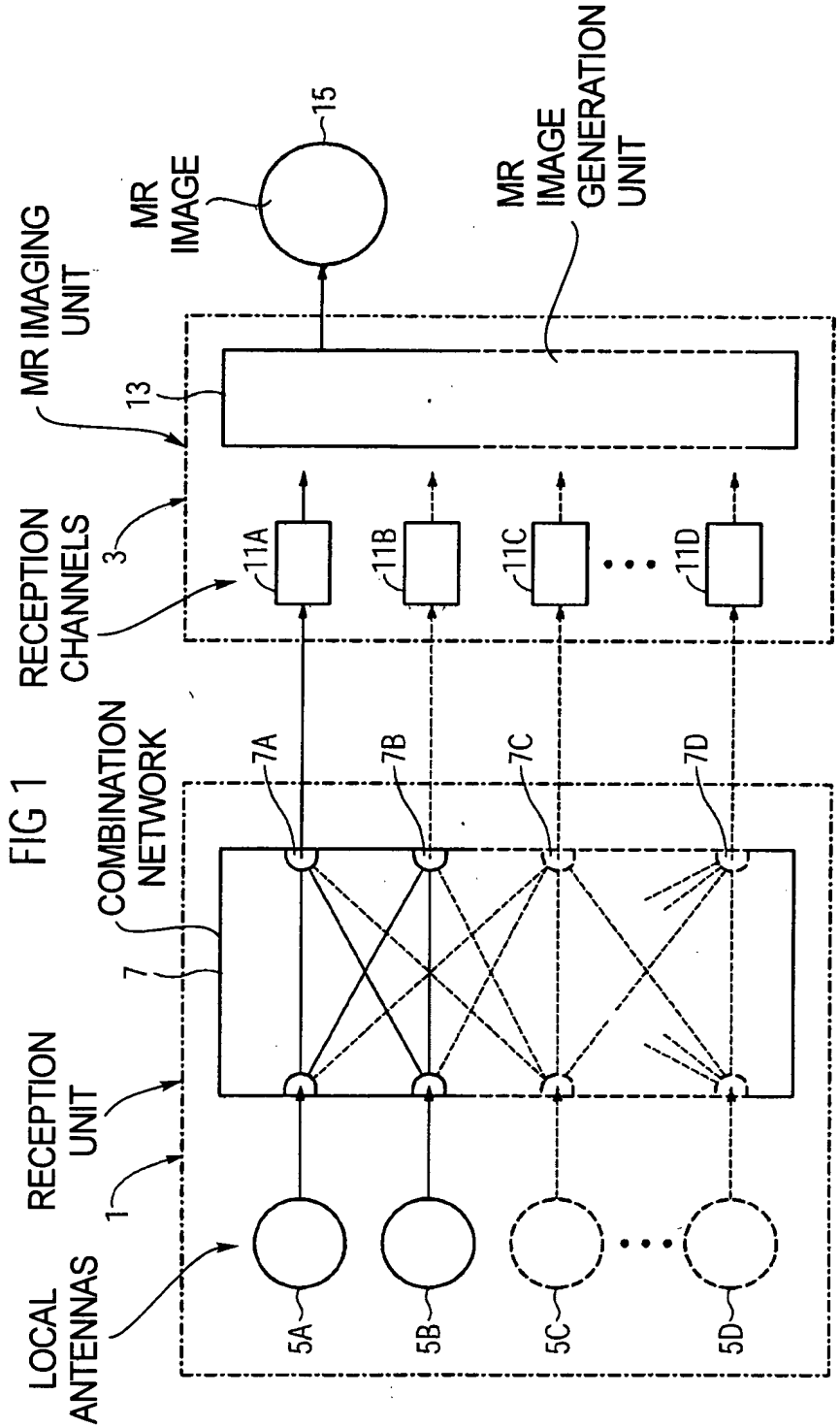


FIG 1

FIG 2

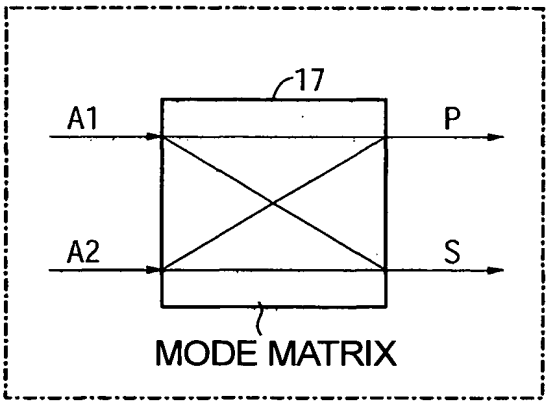
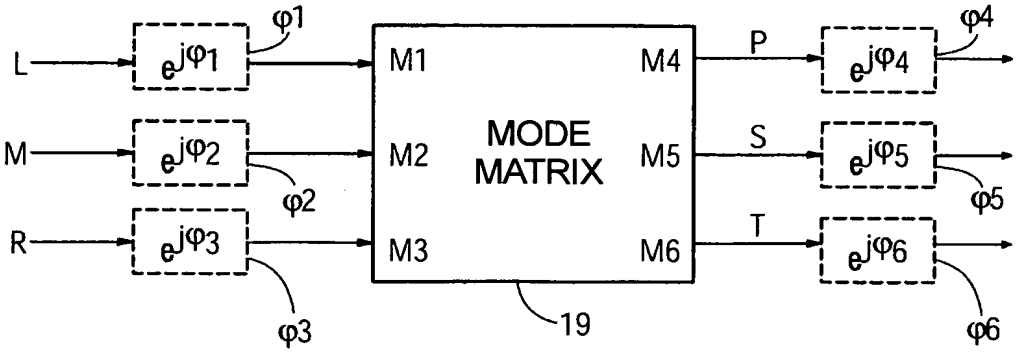

17
A1
P
A2
S
MODE MATRIX

FIG 3


φ1
L
$e^{j\varphi 1}$
M1
M4
P
$e^{j\varphi 4}$
φ4
M
$e^{j\varphi 2}$
M2
MODE MATRIX
M5
S
$e^{j\varphi 5}$
φ5
φ2
R
$e^{j\varphi 3}$
M3
M6
T
$e^{j\varphi 6}$
φ3
19
φ6

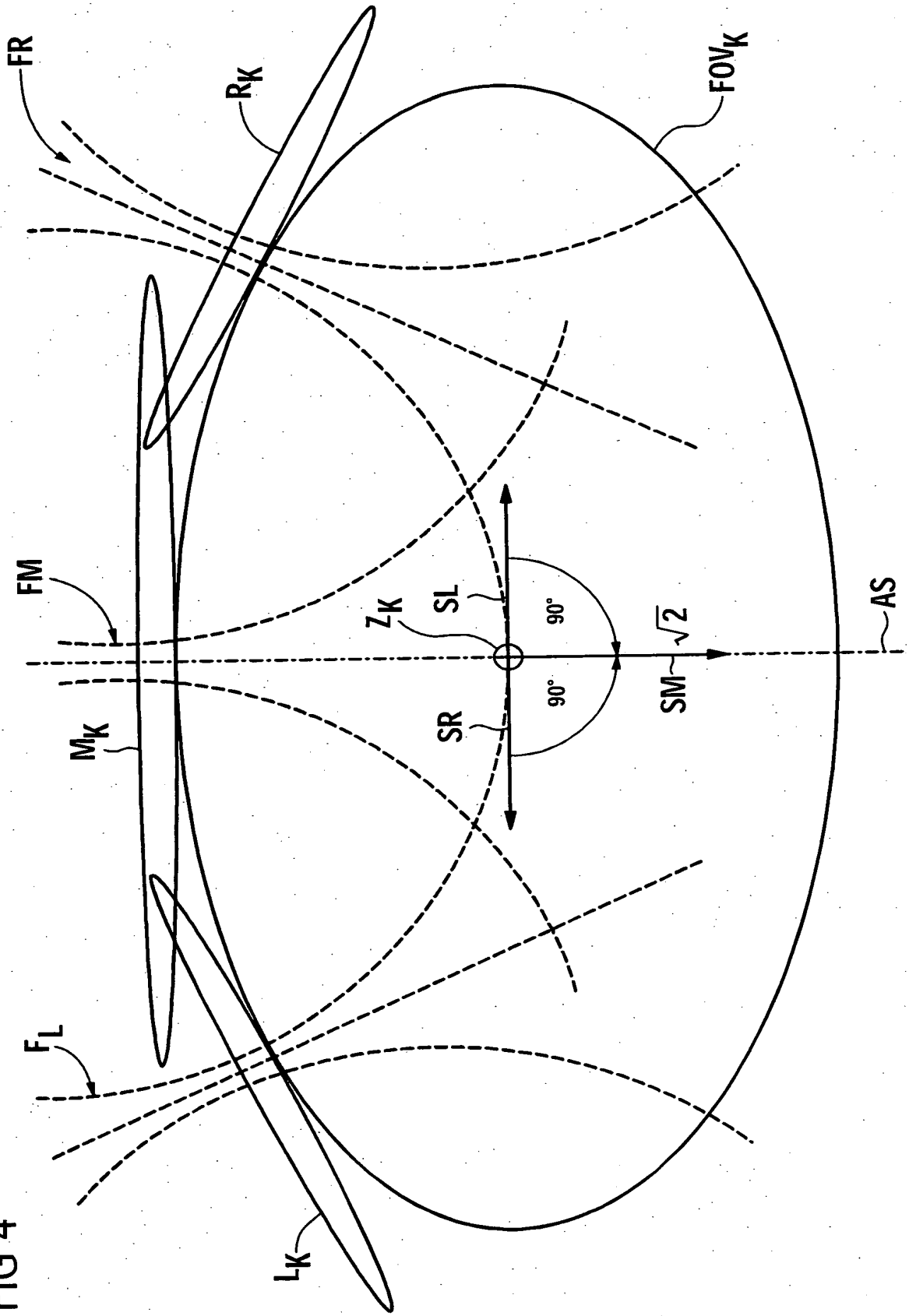


FIG 4

FIG 5C

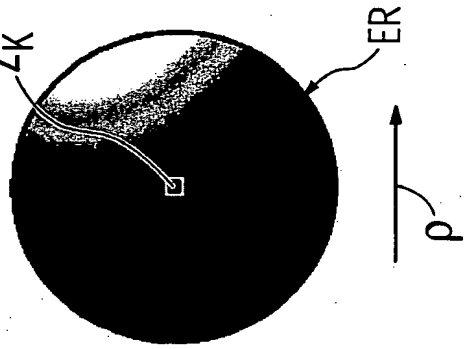


FIG 6C

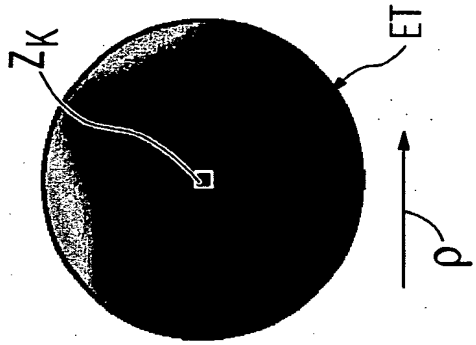


FIG 5B

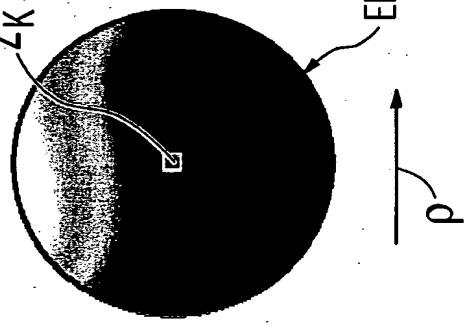


FIG 6B

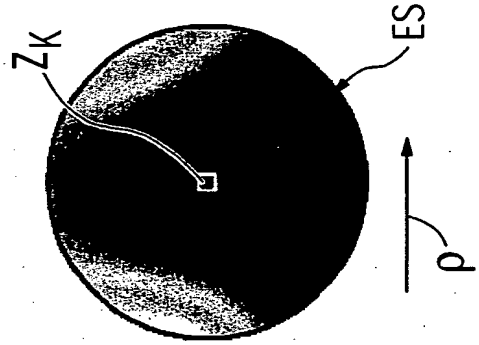


FIG 5A

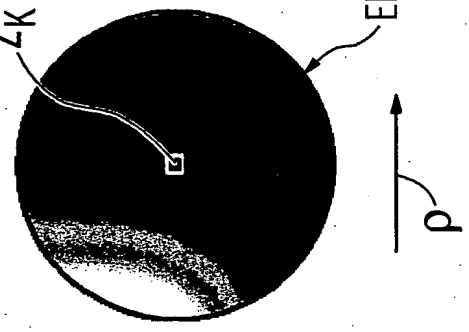


FIG 6A

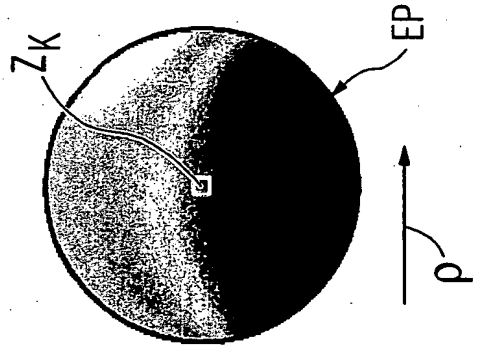


FIG 6E

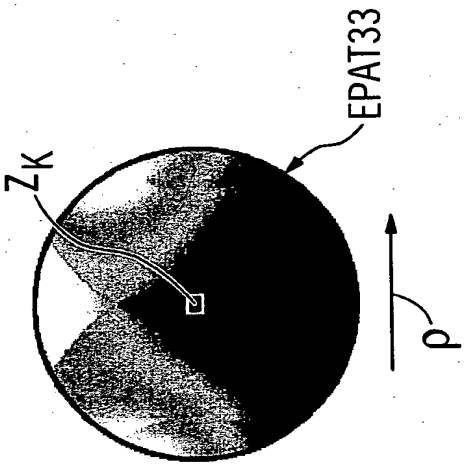


FIG 6G

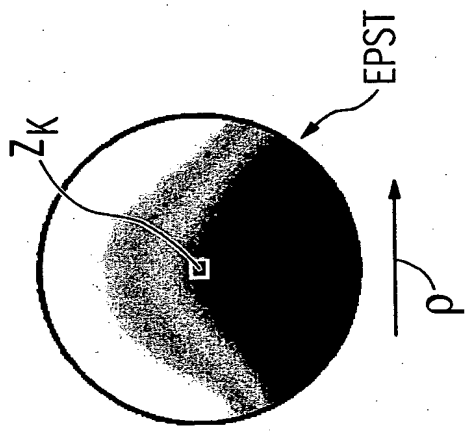


FIG 6D

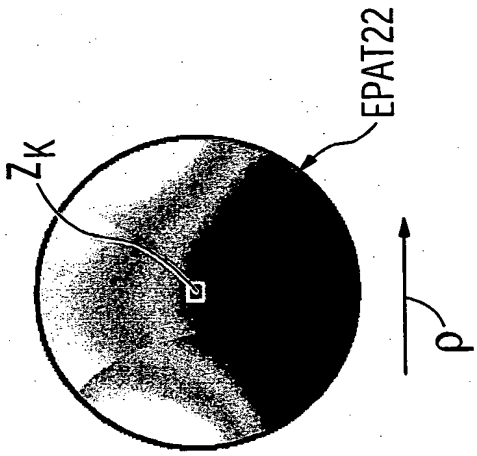
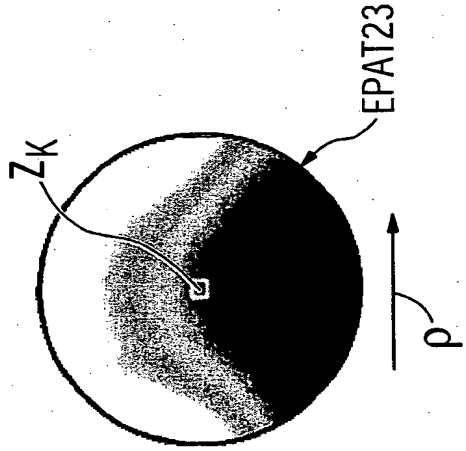


FIG 6F



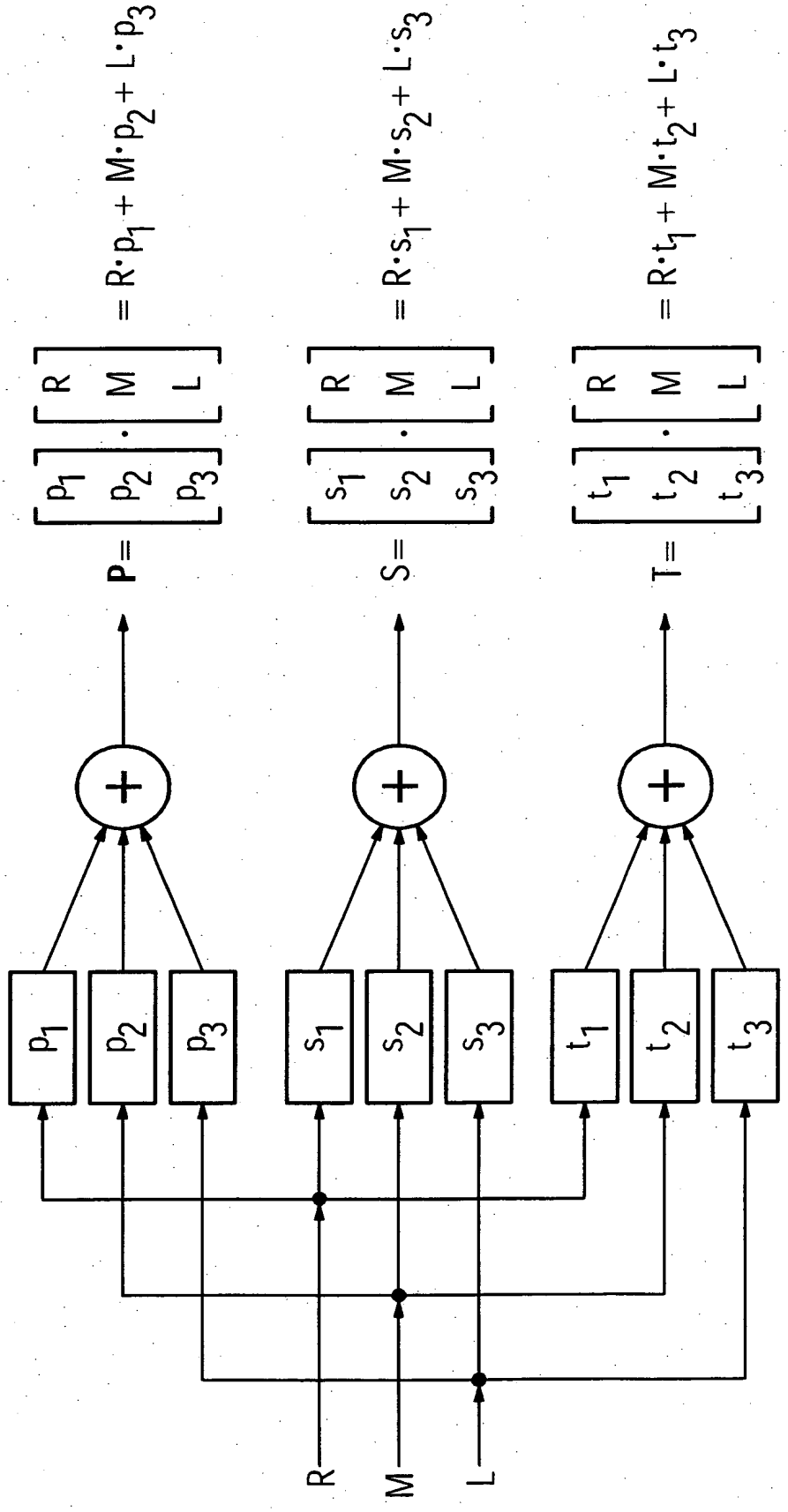

P= [p1 p2 p3] · [R M L] = R·p1 + M·p2 + L·p3
S= [s1 s2 s3] · [R M L] = R·s1 + M·s2 + L·s3
T= [t1 t2 t3] · [R M L] = R·t1 + M·t2 + L·t3
p1
p2
p3
s1
s2
s3
t1
t2
t3
R
M
L

FIG 7

FIG 8

$$\begin{bmatrix} P \\ S \\ T \end{bmatrix} = \begin{bmatrix} p_1 & p_2 & p_3 \\ s_1 & s_2 & s_3 \\ t_1 & t_2 & t_3 \end{bmatrix} \cdot \begin{bmatrix} R \\ M \\ L \end{bmatrix} = \begin{bmatrix} p_1 & p_2 & p_3 \\ s_1 & s_2 & s_3 \\ t_1 & t_2 & t_3 \end{bmatrix} \cdot \mathbf{I}$$

FIG 9

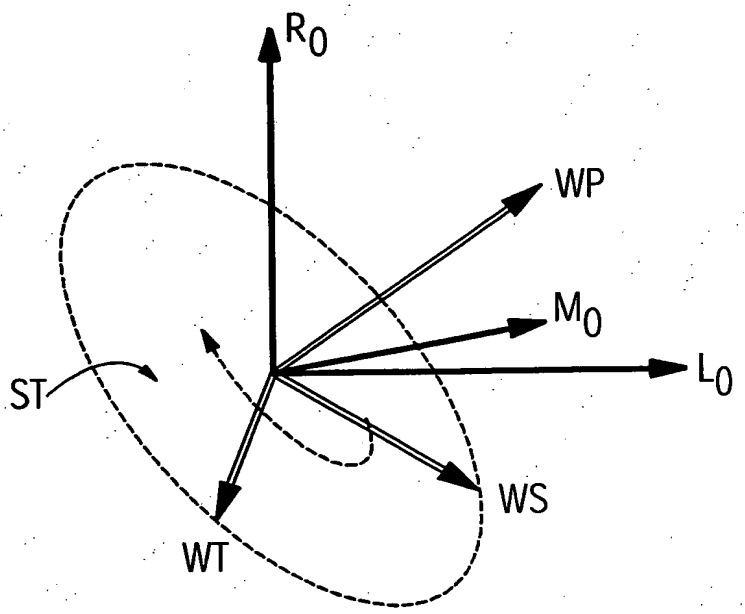


FIG 10

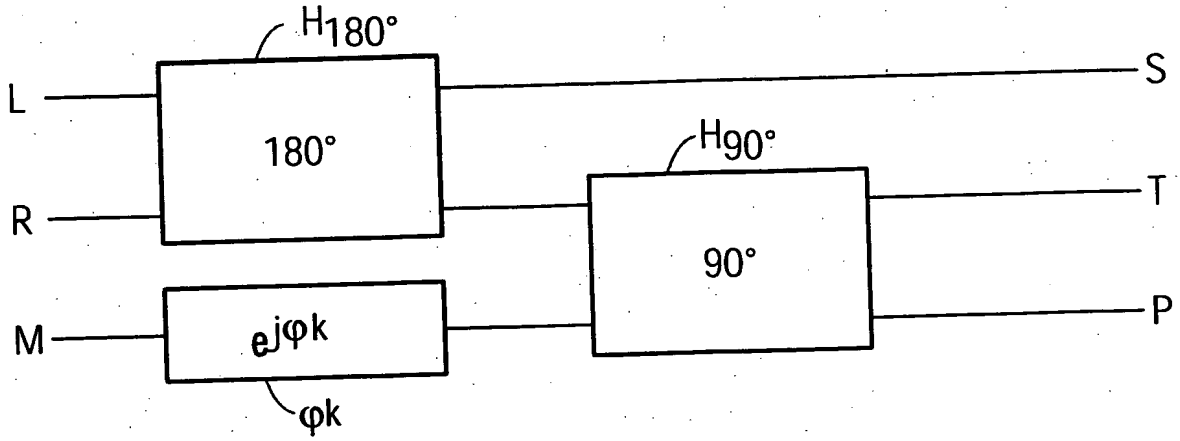


FIG 11

$$\begin{bmatrix} P \\ S \\ T \end{bmatrix} = \begin{bmatrix} \frac{1}{2} & -\frac{j}{\sqrt{2}} & -\frac{1}{2} \\ \frac{1}{\sqrt{2}} & 0 & \frac{1}{\sqrt{2}} \\ \frac{1}{2} & \frac{j}{\sqrt{2}} & -\frac{1}{2} \end{bmatrix} \cdot \begin{bmatrix} R \\ M \\ L \end{bmatrix}$$

FIG 12

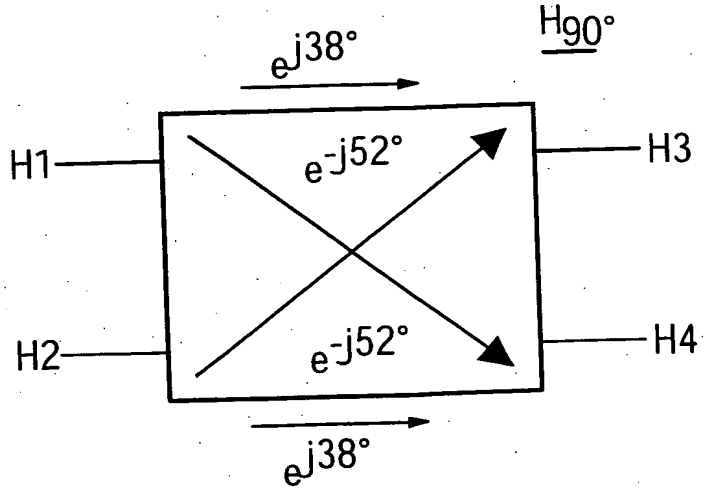


FIG 13

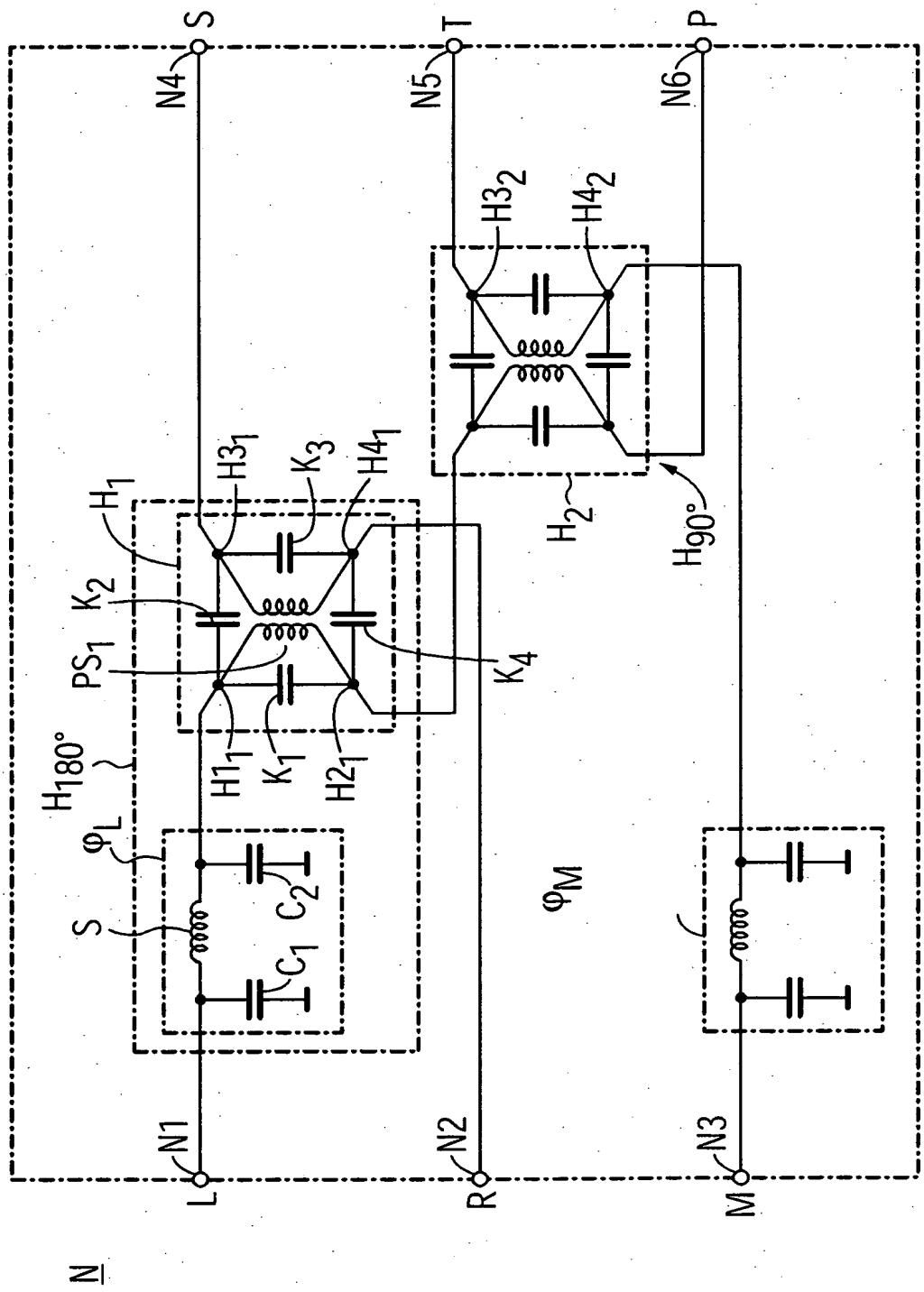

S
T
P
N4
N5
N6
H3₂
H4₂
H3₁
K₃
H4₁
H₁
H₂
H₉₀°
K₂
PS₁
K₄
H₁₈₀°
H1₁
K₁
H2₁
φL
S
C₂
C₁
φM
N1
N2
N3
L
R
M
N

FIG 14

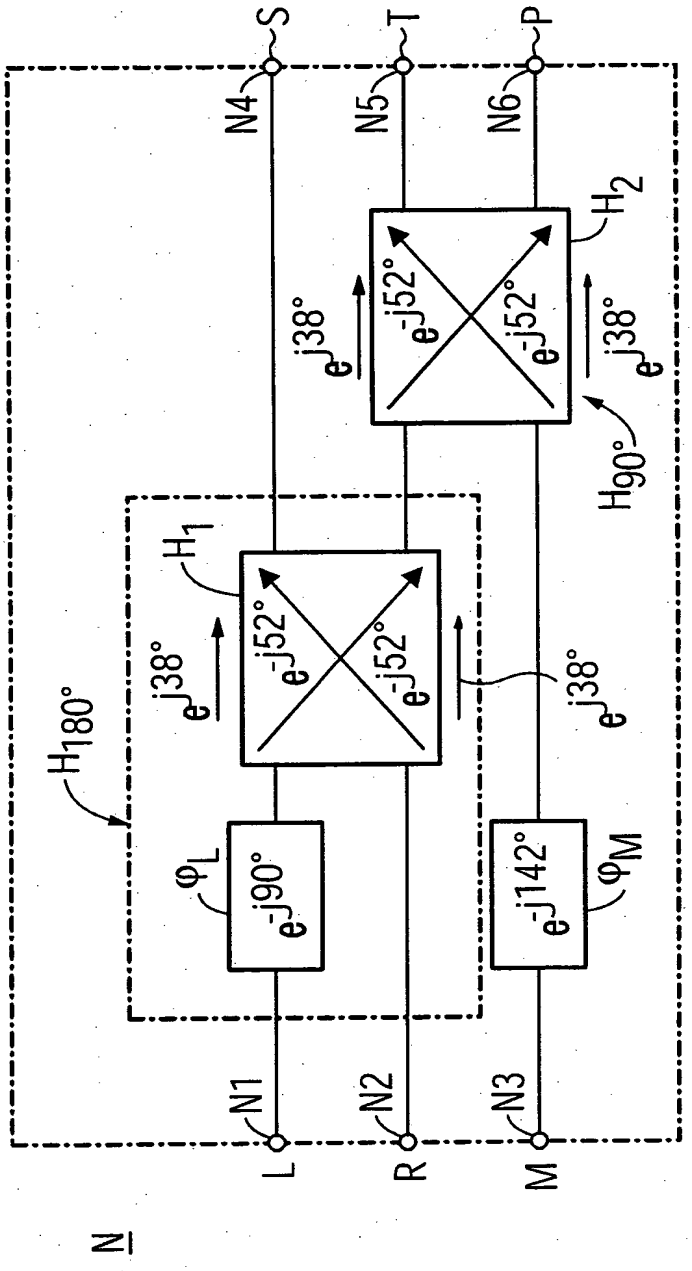

S
T
P
N4
N5
N6
H2
H1
H180°
H90°
e^j38°
e^-j52°
e^j52°
e^-j90°
e^-j142°
φL
φM
N1
N2
N3
L
R
M
N

FIG 15

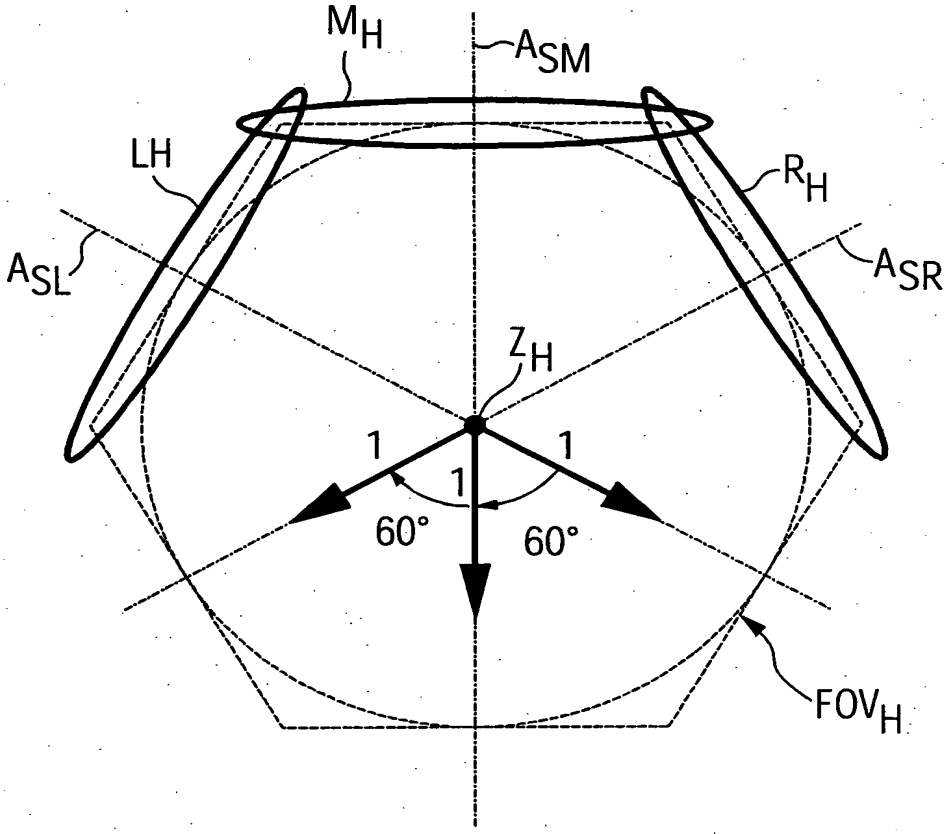
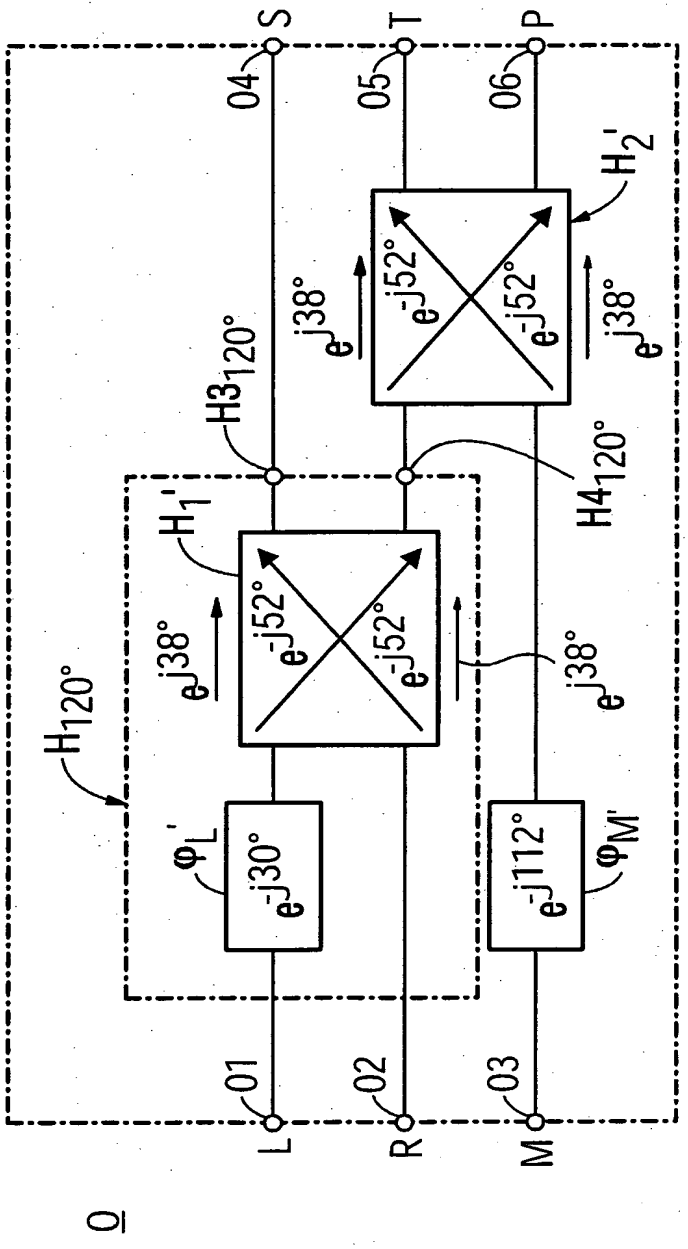


FIG 16


S
T
P
04
05
06
H2'
H3120°
H4120°
H1'
H120°
ΦL'
ΦM'
e-j30°
e-j112°
e-j52°
ej38°
01
02
03
L
R
M
O

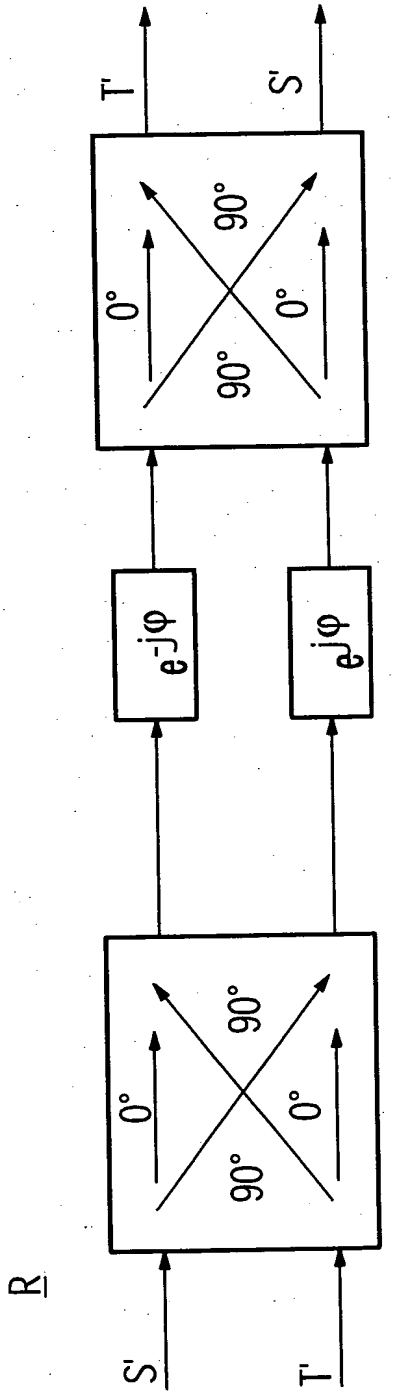


FIG 17

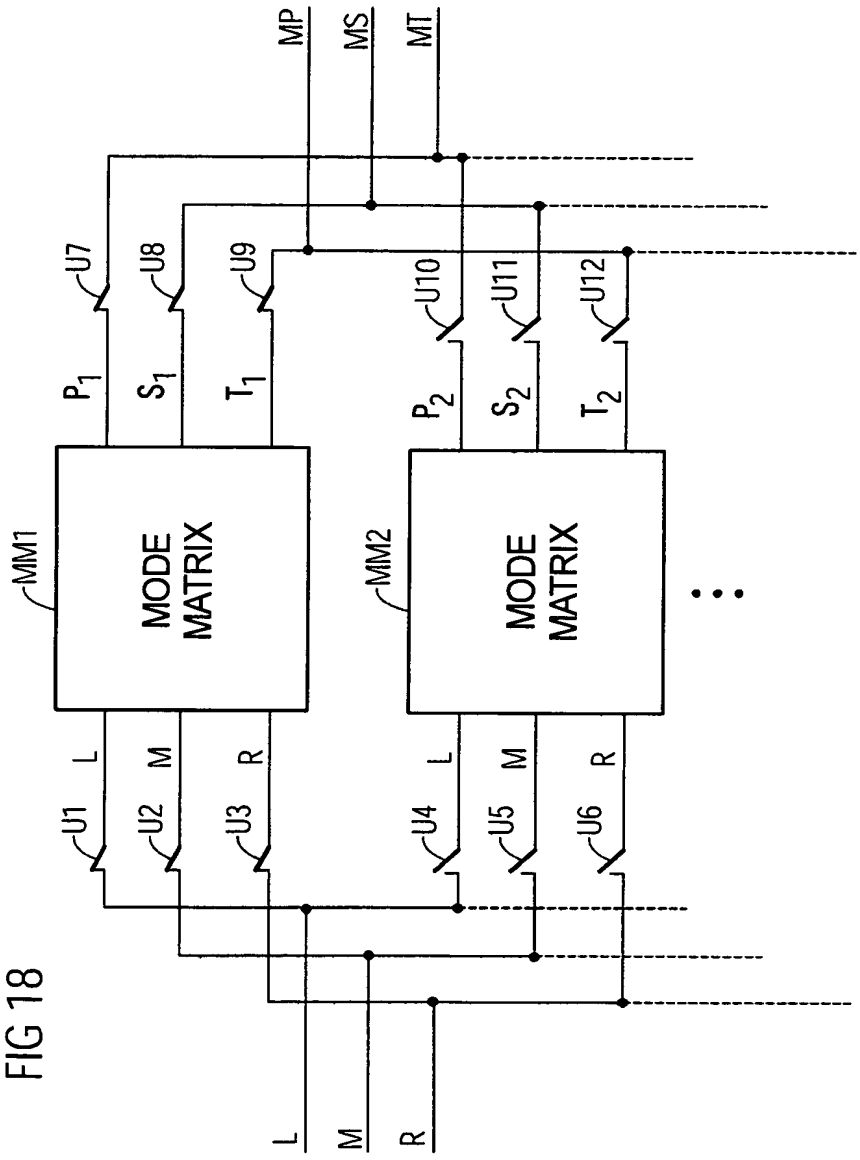

MP
MS
MT
U7
U8
U9
U10
U11
U12
P1
S1
T1
P2
S2
T2
MM1
MODE MATRIX
MM2
MODE MATRIX
L
M
R
U1
U2
U3
U4
U5
U6
L
M
R

FIG 18

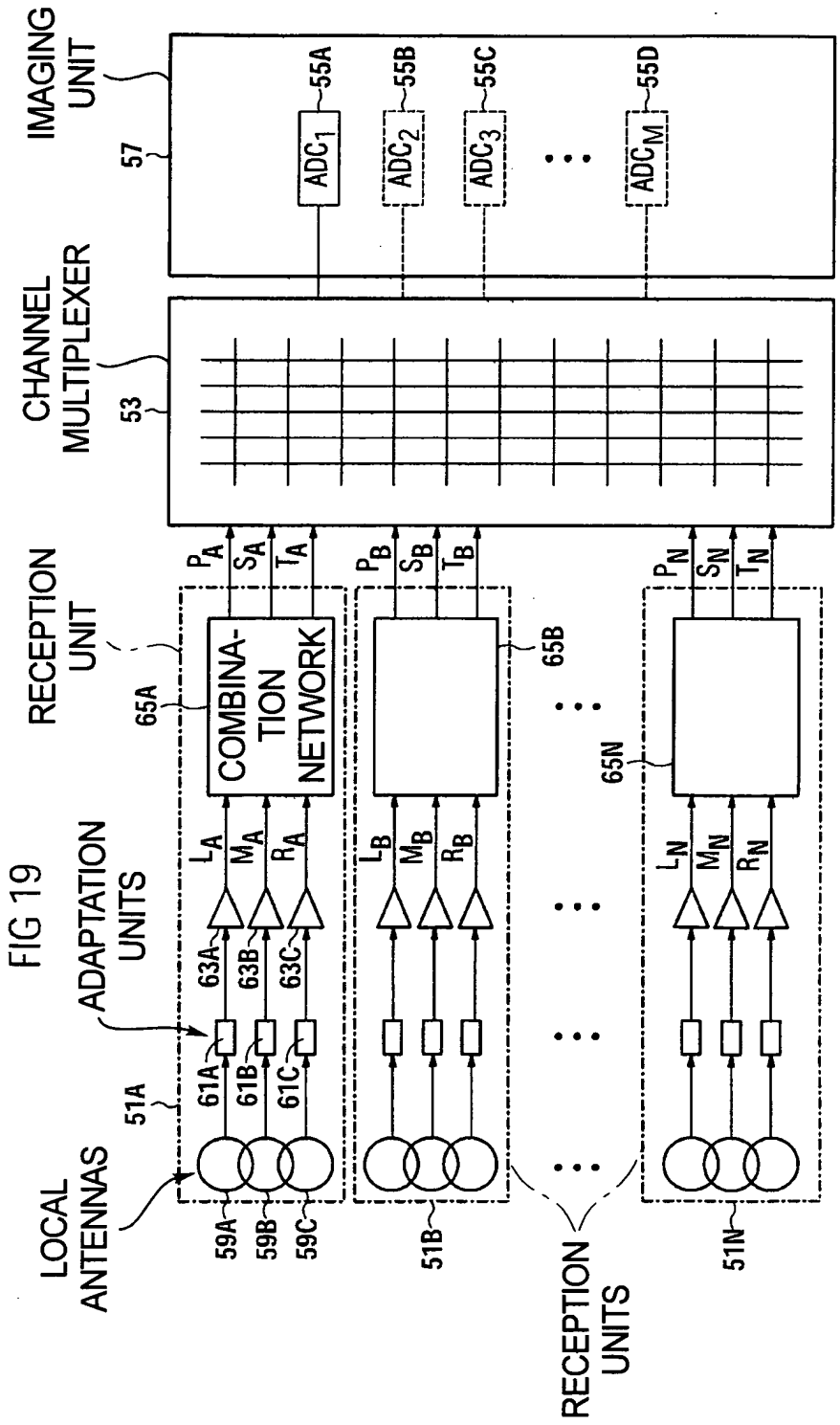

IMAGING UNIT
57
55A
55B
55C
55D
ADC1
ADC2
ADC3
ADCM
CHANNEL MULTIPLEXER
53
RECEPTION UNIT
65A
65B
65N
COMBINA-TION NETWORK
PA
SA
TA
PB
SB
TB
PN
SN
TN
ADAPTATION UNITS
63A
63B
63C
LA
MA
RA
LB
MB
RB
LN
MN
RN
61A
61B
61C
51A
LOCAL ANTENNAS
59A
59B
59C
51B
51N
RECEPTION UNITS

FIG 19

FIG 21

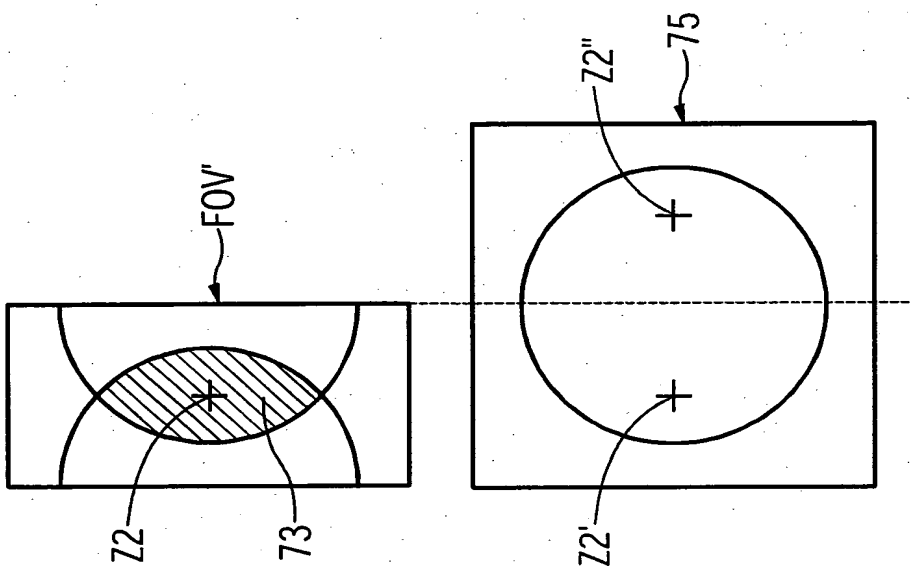
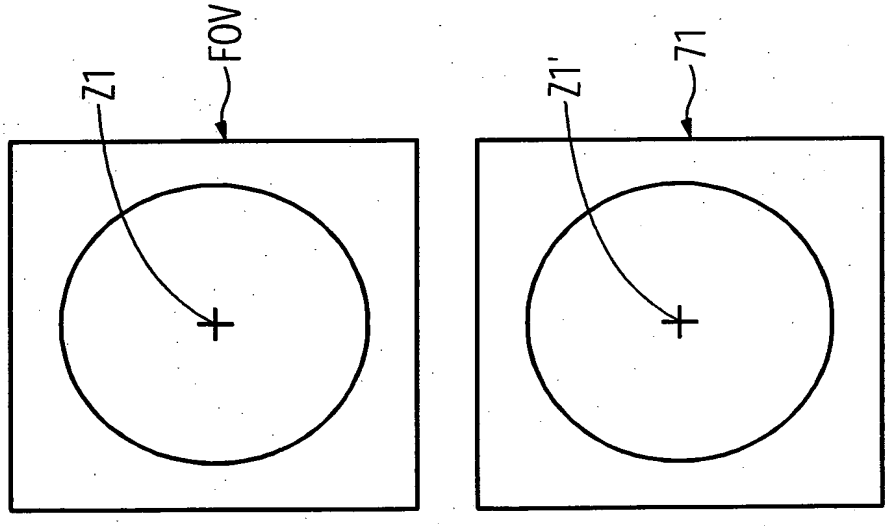



FIG 20